

1                                   **“RECONFIGURABLE CHAIR”**

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3                                   **FIELD OF THE INVENTION**

4                   This invention relates to chairs, specifically to a modular and portable  
5 chair for supporting a user in an upright or prone position, more particularly a chair  
6 for facilitating massage therapy to forming a workstation.

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8                                   **BACKGROUND OF THE INVENTION**

9                   Body massage has long been done by therapists on athletes, and is  
10 now more accepted by a larger population for therapeutic and enjoyment purposes.  
11 Massage is used more and more as an approach for over all personal health as well  
12 as for a sense of relaxation and to provide tension relief. The general concept of  
13 massage is that it requires the client to be securely supported, typically prone on a  
14 specifically configured table. This process prohibits some people from getting a  
15 massage, or determines that a massage be received at a therapist's office.

16                  There are existing chairs used for administering massages to clients.  
17 Clients typically sit in such massage chairs in a position facing the chair so that their  
18 back, shoulders, hips and/or neck are supported and accessible to the therapist.  
19 Although most of these chairs are portable and may be taken to the client's home,  
20 office, or other location by the therapist, many are bulky and heavy to transport.  
21 Also these chairs have many parts, require adjustment once assembled, and are  
22 expensive.

1           One type of massage chair uses a form of tubular member for  
2 construction of the chair as described in US patent 5,971,485 to Clark. It teaches a  
3 chair with angularly adjustable support struts, adjustable only after the chair is  
4 assembled, allowing the chair to accept the body conformations of children, women  
5 and men of all sizes.

6           A different approach is US patent 4,746,167 to Palmer et al. It teaches  
7 a portable, knock-down massage chair having a hollow rectangular support base.  
8 The base also acts as a case, and while this permits storage and transport of the  
9 chair and its many parts, it is bulky. A two-panel brace assembly pivots out of a top  
10 opening of the case and is joined to a lid of the case to form a rigid triangular support  
11 assembly. A chest support and face cradle are slideably supported to the brace  
12 assembly, and an arm rest is joined to the lid panel. A seat member is secured atop  
13 side walls of the case and a leg rest is adapted to be secured within the side walls.  
14 A lateral brace must be pivoted out from the base to assist in stabilizing the chair.  
15 The brace assembly, seat and leg rest can be positioned at variable angles by the  
16 use of a number of hardware pieces, once the chair is assembled.

17           Yet another approach is US patent 4,971,040 to Gillotti. It teaches a  
18 portable and collapsible massage chair which is not adjustable. The chair comprises  
19 an elongate upright body member with a pivotally connected leg portion. The body  
20 member carries a chest and face cushion and has a pair of side panels, with arm  
21 cushions extending outwardly from the side panels. A seat cushion and seat  
22 support member are pivotally connected to the leg portion, and extend forward  
23 through the body member side panels to present the seat cushion beneath the chest

1 cushion. The leg portion, seat cushion, and seat support member are all moveable  
2 to be carried within the side panels and create a bulky assembly for storage and  
3 transport.

4 A need exists for a compact and portable massage chair that can be  
5 easily transported and stowed. Adjustability, durability and affordability are also  
6 important elements. Accordingly, it should be quick and easy to assemble and  
7 disassemble, as well as be reconfigurable to create different seating angles. It is  
8 also desirable that the chair accept a variety of interchangeable parts and  
9 accessories.

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## SUMMARY OF THE INVENTION

In one embodiment, a portable chair is an assembly of two side panels and a seat member. The side panels and seat member have corresponding slots which inter-fit, the seat member acting to supportably space the side panels in an stable open position for supporting a user in a prone position. . Preferably, the side panels are substantially triangular in shape. The panels are pivotally connected at a straddle edge allowing the panels to either open flat or close parallel to each other. The other two edges of the panels, each of different length, act as bases for the chair. Depending on which of the base edges are used, alternative seating angles are created, accommodating users of different size and allowing for different body positions.

Accordingly, in a broad aspect, a portable chair is adapted for support on a surface and comprises at least two side panels, each panel having at least a first base edge, adapted to engage the supporting surface, and a straddle edge. The side panels are pivotally joined at the straddle edges enabling the panels to fold between a parallel, closed position and a splayed, open position. At least a first pair of panel slots extend from the straddle edges in each panel, this pair of panel slots being aligned when the panels are in the closed position. A seat member has a pair of seat stops complementary to the first pair of panel slots so that when the panels are in the open position, the pair of seat stops slidably mate with the first pair of panel slots. The seat stops couple with the straddle edges of the panels and further support spacing the panels in the open position. A weight, such as a user or patient,

1 is supported by the seat member which transfers the load through the side panels to  
2 a supporting surface such as a floor.

3           The portable chair can be assembled prior to use or during use.  
4 Assembly during use aids mobility impaired users by enabling the user to first  
5 straddle the panels and thereafter to slide the seat member into the panel slots  
6 behind the user's legs.

7           More preferably, each substantially triangular panel also comprises a  
8 second base edge. The first base edge and straddle edge meet to make a first  
9 seating angle, and the second base edge and straddle edge meet to make a second  
10 seating angle. The seat member and seat stops engage either first or second pairs  
11 of panel slots depending on the orientation of the straddle edge. The straddle edges  
12 of the chair are contoured for removing superfluous materials and for forming open  
13 portions at the end of the panels such as for accommodating a face rest. The  
14 straddle edges and seat members are padded. Tab and slot arrangement enable  
15 removable arm rests. Further, additional openings and slots can accommodate  
16 additional support members extending between the panels for further support of the  
17 chair. The seat member, additional support members, and arms can be removable  
18 stored on an inner wall of the panels so that when folded to the closed position the  
19 panels encase or stow these parts and allow the chair to be transported easily as  
20 one unit.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1a is an exploded perspective view of one embodiment of the chair indicating the placement of the seat member, panels, and arm rests;

Figure 1b is a perspective view of the chair in a preferred embodiment, assembled with additional support members and cushions;

Figure 2 is a plan view of the side panels pivoted open and lying flat. The hinged side panels are shown with a triangular envelope along with panel slots for the seat member and support openings in each side support;

Figures 3a-3d is a side view schematic illustrating a series of steps for changing the seating angle of the chair. Fig. 3a shows a user sitting in the chair in the first seating angle. Fig. 3b shows the seat member being removed. Fig. 3c shows the chair in a new second seating angle and indicates the seat member position. Fig. 3d shows a user sitting in the new second seating angle;

Figures 4a-4c are a series of front, plan and side views of the chair in stages from the closed position, open position without the seat member, and open position with the seat member. Fig. 4a is a front view of the chair, Fig. 4b is a top view of the chair, and Fig. 4c is a side view of the chair;

Figure 5 is a top view of the side panels illustrating stowing arm rests, support members and the like through removable attachment with hook and loop type fasteners;

Figure 6 is a perspective front view of closed, folded side panels sandwiching seat member and support members therebetween for transportation or storage; and

1                Figures 7a-7b are alternate embodiments of the invention, Fig. 7a  
2    showing additional attachments creating surfaces for uses such as a desk, shelving,  
3    or pet grooming/podium and Fig. 7b indicates a second pair of arm rests being used  
4    as leg rests.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

With reference to Figure 1a and 1b, an embodiment of the invention is an assembly forming a chair 10 having detachable and inter-fitting parts for supporting a user in the upright or prone position such as for facilitating a back massage or for creating work surfaces. Herein, prone is defined as sitting and leaning face down ranging from an almost upright position to a more forward and flat position. The chair 10 comprises two side panels 11 pivotally connected at a straddle edge 12, at least a first pair of panel slots 20 extending from the straddle edge 12 of side panel 11, and a seat member 30 that inter-fits to the panel slots 20. The seat member 30 has a pair of seat stops 31 complementary to the first pair of panel slots. When the panels are in the open position, the seat stops 31 slideably mate with the first pair of panel slots, and couple with the straddle edges 12 of the side panels 11, spacing and stabilizing the side panels 11 in a stable played position. The entire weight is supported by the seat member 30 which transfers the load through the side panels 11 to a supporting surface such as a floor.

As shown in Fig. 2, two side panels 11 are pivotally connected to each other through hinge mechanisms 13. The hinge mechanisms 13 permit a wide range of rotation of the side panels 11 with respect to one another. The side panels 11 fold between a parallel, closed position 35 of zero degrees (Fig. 6), a splayed, open position 36 of about 30 degrees (Fig. 4) and a flat position (Fig. 5). Each side panel 11 has a substantially triangular profile. In other words, the side panels 11 fit within a triangular envelope 40, although the three edges are not necessarily linear and thus the ends do not necessarily terminate at an apex. The two non-straddle



1 edges of the side panels form first 41 and second base edges 42. The base edges  
2 41, 42 are of different length creating different seating angles depending on which  
3 base edge 41, 42 is used to support the chair.

4 As shown in Fig. 3, the combination of the straddle edge 12 and the  
5 first base edge 41 creates a more upright, first seating angle 43 while the straddle  
6 edge 12 and second base edge 42 combination creates a more forwardly prone,  
7 second seating angle 44. The different seating angles 43, 44 ultimately  
8 accommodate users of different size or enable different applications for the chair.

9 The basic steps of assembly and positioning of the chair 10 between  
10 two seating angles are shown in Figs. 3a-3d. First, the chair 10 is shown positioned  
11 on the first base edge 41 in a substantially upright orientation. The seat member 30  
12 slidably mates with the first pair of panels slots 20 enabling a user to sit at the first  
13 seating angle 43 (Fig. 3a). To change the seating angle 43, the seat member 30  
14 slides out (Fig. 3b). The chair 10 is re-positioned on the second base edge 42 and  
15 the seat stops 31 are mated with a second pair of panel slots 21 (Fig. 3c). The user  
16 can now sit in a more forward prone position at the second seating angle 44 (Fig.  
17 3d). Note that in Figs. 3a or 3d, the seat member 30 can be mated after the user  
18 straddles the straddle edge 12, sandwiching the user between the seat member 30  
19 and the panels 11. Assembly after the user straddles the panels 11 aids mobility  
20 impaired users by avoiding the need to lift or swing their legs over or around the seat  
21 member 30.

22 Figs. 1a and 1b show the assembly of the chair 10 for one seating  
23 angle 43 or 44. The panels 11 are splayed from the closed position 35 (not shown)

1 to the open position 36 (shown). The seat member 30 inter-fits with the first pair of  
2 panel slots 20. The first pair of panel slots 20 extend into the panels from the  
3 straddle edges 12 and are aligned with each other when the panels 11 are in the  
4 closed position 35. The seat member 30 has as pair of seat stops 31 which are  
5 complementary to the first pair of panel slots 20. When the side panels 11 are in the  
6 open position 36, the pair of seat stops 31 cooperate and slidably mate with the first  
7 pair of panel slots 20 for coupling the seat member 30 with the straddle edges 12 of  
8 the side panels 11. The seat stops 31 spaces the panels 11 in the open position 36,  
9 preventing further opening or closing of the panels 11.

10 The straddle edges of the chair are contoured for removing  
11 superfluous materials and for forming open portions at the end of the panels such as  
12 for accommodating an open face rest 92. The contour creates diverging portions, a  
13 first diverging portion 90 above the seat member 30, and a second diverging portion  
14 91 below the seat member 30. The diverging portions 90, 91 alternatively provide  
15 an open face rest 92 when the chair is positioned in either seating angle 43 or 44.  
16 Fig. 2 illustrates one embodiment of the contouring of the straddle edges 12 of the  
17 chair and of the bases 41,42.

18 A second pair of panel slots 21 extend from the straddle edges 12 and  
19 are preferably substantially parallel to the base edge of each panel 11. The slots are  
20 aligned with each other when the panels 11 are in the closed position 35. The seat  
21 member 30 couples with either the first or second pair of panel slots 20, 21 when the  
22 chair 10 is alternatively positioned in either the first 43 or second seating angle 44,  
23 as shown in Fig. 3a-3d.

1                   Referring back to Fig. 1a, in another embodiment a first pair of  
2 openings 50 are formed in each of the side panels 11, intermediate the seat member  
3 30 and a top 45 of the chair 10, the openings 50 being aligned when the panels 11  
4 are in the closed position 35. A third pair of panel slots 22 extend from each  
5 opening 50. A first support member 60 having a first pair of support slots 65 inter-fits  
6 through the openings 50 and slidably mates with the third pair panel slots 22. The  
7 first support member 60 couples with the side panels 11 and further supports  
8 spacing of the side panels 11 in the open position 36. Additionally, the first support  
9 member 60 can act as a support for the user's upper limbs. For example, the first  
10 support member 60 extends beyond each side panel 11 forming an elbow rest 70,  
11 one on each side. Alternatively, the user can extend their arms through the  
12 openings 50 for more distributed arm support on the first support member 60.

13                   Preferably, a second pair of openings 51 are formed in each of the side  
14 panels 11, intermediate the seat member 30 and the base of the chair 41. The  
15 openings 51 are strategically placed and are similar to openings 50 in that they are  
16 used when the chair 10 is supported on the alternative base edges 41 or 42, or used  
17 concurrently with openings 50. A fourth pair of panel slots 23 extend from each  
18 opening 51. A second support member 61 having a second pair of support slots 66  
19 inter-fits through the openings 51 and slidably mates with the fourth pair panel slots  
20 23. The second support member 61 couples with the side panels 11 and further  
21 supports spacing of the side panels 11 in the open position 36. The second support  
22 member 61 extends beyond each side panel 11 providing an alternate elbow rest 70,  
23 one on each side, when the chair is positioned in either seating angle 43 or 44.

1           To add further function to the chair 10, a first pair of arm rests 80, one  
2 per side panel 11 are removeably secured to the side panels 11, intermediate the  
3 seat member 30 and the top of the chair 45. A tab 82 extending from each arm rest  
4 80 fits into one of one or more corresponding tab slots 83, at least one in each panel  
5 11. The tab 82 frictionally engages the tab slot 83 securing the arm rests 80 in  
6 place. As shown in Fig. 7b, a second pair of arm rests 81 are optionally secured to  
7 the side panels 11, intermediate the seat member 30 and the base of the chair 41,  
8 42. The second pair of arm rests 81 alternatively provide arm support or act as a leg  
9 rests 81 (Fig. 7b) when the chair is positioned in either seating angle 43 or 44.

10           With reference to Fig. 1b, to further facilitate use of the chair 10 for  
11 massage, cushions 95 are attached to the arm rests 80, elbow rests 70, seat  
12 member 30, along the straddle edge 12 and open face rest 92 for torso, chest and  
13 face comfort. The cushions 95 are attached with a hook and loop type fastener 86,  
14 such as VELCRO<sup>TM</sup>, (not seen) for quick and easy assembly and re-positioning  
15 when the seating angle 43, 44 of the chair 10 is changed.

16           With reference to Fig. 5, the side panels 11 can be folded open and  
17 flat. Support members 60, 61, seat member 30 (not shown), elbow rests 70, arm  
18 rests 80, and cushions 95 (not shown) are removeably attached to an inner wall 11a  
19 of side panels 11, such as with hook and loop type fasteners 86, for quick and easy  
20 assembly and repositioning when the panels 11 are splayed to the open position 36  
21 and when seating angle 43, 44 of the chair 10 is changed. Shown in Fig. 6, the  
22 hinged mechanisms 13 also allow the panels 11 to fold flat for portability and can  
23 sandwich the support members 60, 61, seat member 30, elbow rests 70, arm rests

1 80, and cushions 95 between them, so that the panels 11 and its parts 60, 61, 30,  
2 70, 80 and 95 can be easily stowed and transported.

3 With reference to Fig. 7a, fifth and sixth panel slots 24, 25 extend from  
4 the straddle edges 12 of the side panels 11. The fifth and sixth panel slots 24, 25  
5 are additional slots to allow for other embodiments of the invention, including  
6 additional surface member 62 to slidably mating with the side panels 11 when in the  
7 open position 36. for horizontal orientation of surface members 62, the additional  
8 slots 24, 25 are substantially perpendicular to and cross substantially horizontal first  
9 and second panel slots 20, 21 respectively. A second additional surface member  
10 63 contains diverging position slots 96 which orient the surface member 63 when  
11 lowered over the side panels 11 adjacent what would be the top end 45. Surface  
12 members 62 and 63 can be used as surfaces for such things as a desk, shelf, or pet  
13 grooming station/podium. Surface members 62 and 63 can also be removeably  
14 attached to the side panels 11 for storage and transportation.

15 A cavity 97 is formed under the splayed panels 11 which can be used  
16 for storage when the chair 10 is in the open position 36. Use of netting or other  
17 types of closure between the side panels 11 extending between the base 41,42 not  
18 currently resting on the surface, for enabling restricted access or egress from the  
19 cavity 97. Examples of uses for other embodiments include such things as a desk,  
20 shelf, or pet grooming station or podium.